**Hi-Tech Tagger**

 Operation Manual

**Firmware Version 2.62-02**

(Rev J)

**READ THIS !!** This is an operation manual for the Hi-Tech Tagger operating system. Details of tagger construction or programming are not covered in this document. This unit does not use any kind of laser that could be harmful in any way. It uses an inferred led similar to a remote control with an added lens for longer distances.

**OVERVIEW OF SYSTEM FEATURES**

* 100 Players
* 4 Teams
* Fully editable gun and game configurations
* Full-Auto Switch
* New! Support for Medic Box and Ammo Box “pick-ups”.

Players can “pick up” additional Health and Clips on the field

* Adjustable “Barrel Overheat” function
* Automatic Respawn – Adjustable Time Delay
* Automatic Timed Games – Game Over after time limit expires
* Electronic “Flags” – Sensor LEDs flash to indicate “carry”; drop flags when killed
* Updated: ”Zombie” game mode – dead players come back?. as zombies!
* Gun-to-gun wireless “Cloning” allows instant configuration of additional taggers
* Intelligent display backlight control
* Anti-cheating features
* Infrared (IR) LED fail monitor w/ alarm (RevG hardware only)
* Battery meter: 220 is a full charge, but it is recommended to charge at 160 or sooner to prolong battery life. (Lithium Ion batteries have no memory and may be charged at anytime.)
* Built-in Referee Gun functions (any tagger can be configured as the Ref Gun)
* Built-in ISD recorder function for uploading custom sound effects (RevH hardware only)

No need to purchase external sound chip programmer.

**Built-In Referee Gun (Master Controller) Features:**

* New Game, Admin Kill, Respawn, Pause
* Collect Scores, View Scores (individual & team), send scores to PC
* Test Sensors

**Add-on Devices Supported:**

* Micro MT Taggers (uMT) (uMT taggers support limited feature set / no scoring)
* Flag Station - up to 16 unique flags
* Medic Box – up to 16 medic boxes (pick-ups)
* Ammo Box – up to 16 ammo boxes (pick-ups)
* Respawn Station
* First Aid Kit (Medic)
* Ammo Can (Armor)
* Grenade (Instant Kill or Variable Damage)
* Claymore (Instant Kill or Variable Damage)
* Bazooka (Variable Damage)
* Stun Grenade (6-second stun/flash-bang)
* Bomb / Trip Mine (Instant Kill)
* Radiation Emitter (Area Denial; Variable Damage)

**POWER ON**

Some menus and functions are accessed by holding buttons on the tagger while turning the Key (power

switch) ON. For two of the menus you must continue holding the button for about 3 seconds. These

power on combinations ensure that certain functions are ONLY accessible to the game officials / referee.

**Hold this button while turning**

**power on:** (To access this menu continue holding (3 seconds) to

access this menu)

MODE (Black) Edit Gun Settings / Cloning Change Player ID

RELOAD (Red) Select Function (Normal / Ref Gun) Edit Global Parameters

MODE + RELOAD + TRIGGER Restore Factory Settings

**NORMAL POWER UP**

Turn Key Switch (power switch) to the “ON” position.

Sensor LEDs flash briefly.

‘Ready to Engage’ sound plays.

Hold the MODE button for 1 second to turn the LCD backlight on/off.

*START GAME:*

Press and hold trigger for 1 second.

Countdown begins.

‘Action’ sound plays.

LCD displays the Main Firing Screen.

**LCD Display – Main Firing Screen**

Rounds Clips

**R030 C20**

**100 Eagle**

Health PlayerID

R### Rounds Remaining Upper Left

C## Clips Remaining Upper Right

100 Health Value Lower Left

Eagle Player ID Lower Right

The Player ID portion of the screen will show the ID of the last player that hit you.

After 5 seconds this reverts back to your own Player ID.

**BASIC OPERATIONS**

**Firing**

Press the TRIGGER to fire.

**Change Display Screens**

Press the MODE button to change screens. The display will automatically revert to the Main Firing Screen when firing or Reloading. The following information is available:

**Reloading**

Press the RELOAD button to simulate removing an empty (or partial) clip and replacing it with a

full clip. The Reload Delay simulates the time required to perform a clip change. You can initiate a

Reload at any time to ensure you have a full Clip. You will not be able to fire during the Reload

Delay, but can still take hits from opponents. During reloading, the Total Ammo (rounds)

remaining is displayed above the Reload progress bar on the LCD.

\_ You can perform a Reload at any time. Reloading a partial clip will not result in any

loss of ammo. The tagger automatically manages your ammo, so any partial clips are

recombined into full clips.

\_ If you are hit during a reload, the LCD will revert to the main firing display, but you

must still wait until the reload cycle is complete before firing.

**Full-Auto Switch (optional)**

OFF = Semi-Auto or Burst (depending on setting of the Fire Select parameter)

ON = Full-Auto

**Battery Status** *220=Full, 160=minimum charge recommended (Lithium Ion batteries have no memory so charging after each use is recommended.)*

**Elapsed Time** Elapsed time since start of game. For timed games, it is useful to check this occasionally.

**Lives** Remaining “Respawns” (if enabled)

**Team ID** Your Team

**Flags Captured** *This will only be visible after at least one Flag has been captured.*

**LCD Backlight**

Hold the MODE button for 1 second to toggle LCD backlight on/off.

Backlight automatically turns off during Firing.

**Restore Default Settings (Factory Reset)**

Turn the Key (power switch) OFF.

Hold the RELOAD, MODE and TRIGGER buttons while turning the key ON.

***Note:*** *PlayerID will reset to 00 Eagle.*

**Set Player ID (Tagger ID)**

Turn the key OFF.

Hold the MODE button while turning the key ON.

Continue holding the MODE button (~3 seconds) until “Player ID” is displayed.

Use the RELOAD and MODE buttons to scroll through available Player IDs.

Use the TRIGGER to “save” the currently selected ID and exit.

***NOTE:*** *Every gun must be set to a unique Player ID.*

**GAME OVER MENUS**

These screens are only accessible when you are “Tagged Out” (Dead), or after receiving an End

Game command from Referee Gun. Use the RELOAD button to scroll through stats.

**GAME OVER**

**Game Time** T+ mins:secs This shows how long you lasted in the game.

**Hits By** Number of times you were “hit” by each player. Use RELOAD button to

scroll through Player IDs. Only players that hit you will be displayed.

**Last Hit** Player that “tagged you out”.

**Tag Outs** Number of times you were killed (tagged out). Usually this is 1 or 0

unless Respawns were allowed in the game.

**Flags** Number of Flags you captured.

**Rounds Fired** Number of Rounds you fired.

**EDIT PARAMETERS**

Turn the key OFF.

Hold the MODE button while turning the key ON.

The LCD displays “Edit Settings”

Press the TRIGGER to enter the editing mode.

Use the RELOAD and MODE buttons to adjust parameter values up/down.

Use the TRIGGER to “select” a value and advance to next parameter.

**Team ID** Red, Blue, Yellow, Green

Assigning Players to teams enables Team Scoring and use of the Friendly Fire feature.

**Friendly Fire** On / Off

When Friendly Fire is ON, players can receive hits from both their opponents (different Team ID)

and their teammates (same Team ID). When Friendly Fire is OFF, players can only be hit by

opponents (Different Team ID). Friendly Fire should be turned ON during “free-for-all” games

(no teams).

**Sounds** Mil-Sim / Sci-Fi / Silenced

This parameter affects the Firing and Reload sounds. There is no sound at the end of reload

cycle when “Silenced” is selected.

**Muzzle Flash** On / Off

**Life** 1 to 999

Starting Health value. The default setting is “100” to indicate 100% Health.

**Armor** 0 to 200, Off

Every Hit decreases your Armor value by “1”. If you start with “5” armor points, then after 5

hits, your Armor is depleted (“0”). Armor reduces the value of all hits by ½ (regardless of

Damage value). Armor does not protect you from “instant kill” devices.

**Clip Size** 1 to 250, UNL

Rounds per Clip. This is the number of rounds that can be fired before Reloading. Can also be

set to UNL (unlimited rounds). In this case, players will not need to use the Reload button.

**Clips** 2 to 200, UNL. This is the total number of clips carried. Can also be set to UNL (unlimited clips).

**Reload Delay** 1 to 30 Seconds

Simulates the time required to reload. After pressing the RELOAD button, the LCD display will

show a progress bar. During this delay, the player cannot fire but can still be hit.

**Fire Select** Semi-Auto, Burst, Full-Auto

**Burst Rounds** 2, 3, 4, 5, 6

Sets the number of rounds fired in each “Burst” (only if Burst is selected Firing Mode)

**Cyclic Rate** 250 to 800 Rounds per Minute

Sets the Rate of Fire for the Burst and Full-Auto firing modes.

Be cautious using high Cyclic rates with high Range values, as you can damage the IR LED!

**Damage Points** 1, 2, 4, 5, 7, 10, 15, 17, 20, 25, 30, 35, 40, 50, 75, 100

Sets how many Health Points will be deducted from the opposing player when they are hit.

With this “Variable Damage” feature, it is possible can configure different taggers in a game to

inflict different amounts of Damage. This allows you to simulate different weapon types or

calibers, so that “larger” weapons (e.g. a Sniper Rifle) can do more damage a “smaller” weapon

(e.g. an SMG).

**Hit Delay** 0 to 20 Seconds

Sets the delay after being hit by an opponent. During the Hit Delay, the player cannot fire or

receive further hits.

**Overheat Limit** 10 to 100, Off

The Overheat parameter is used to simulate weapon malfunction due to overheating the barrel

by excessive sustained firing. If Overheat is enabled, the “barrel” becomes hotter with every

round fired. This adds realism by limiting players’ ability to lay down continuous suppressive

fire, especially when using Full Auto at high rates of fire.

\_ The barrel “temperature” will increase with every round fired. If the temperature

reaches the limit, then it will overheat and jam. Player must allow the barrel to cool off

before firing again. After jamming, the LCD will show the barrel temperature.

\_ The barrel will automatically cool off when the player is not firing. The barrel cools

off at a rate of “3” per second. So it will take around 33 seconds for a jammed

(overheated) gun to completely cool. The player does not have to wait until the barrel is

completely cooled off before firing, but the less time they wait – the quicker it will

overheat again.

**Max Respawns** 1 to 20, Off

Sets the maximum number of Automatic Respawns. Setting this to “Off” will disable Automatic

Respawns. The number of remaining respawns is displayed on the Gun Displays as “Lives “.

**Zombie Mode** On / Off

This parameter is not available if “Respawns = Off”.

If Zombie Mode is ON then all players assigned to the Red Team are the “Zombies”. When a

player on any other team is killed they will respawn as a Zombie. See the section on Zombie

Mode for more details.

**Auto Respawn Delay** 10 to 180 Seconds

This parameter is not available if “Respawns = Off”.

Sets the delay time for Auto-Respawns.

**Start Delay** 0 to 240 Seconds

**Death Delay** 0 to 120 Seconds

This provides a delay after a player is Tagged Out. During this delay the Sensor Hit LEDs remain

ON and the LCD displays "Get Medic" along with a countdown timer. A medic can "revive" the

player by adding health points or the player can revive themselves by reaching a medic station

(medic box) before the timer expires. If the player does not receive help in time - they are OUT.

**Game Time Limit** 0 to 120 Minutes (0 = no time limit)

**GLOBAL PARAMETERS**

**IR Power** Indoor / Outdoor

This sets the maximum power (and range) of the Infrared Emitter. Indoor environments should

use Indoor mode to limit reflections and “bounce shots” from walls and objects.

**Range** Min to Max

When using Outdoor mode, the ideal range setting is “60%”. Higher settings (along with higher

cyclic rates) may overdrive the Infrared Emitter and eventually degrade its performance due to

overheating. Note that the effects of the Range parameter are much more profound when

using the Indoor mode.

This requires some experimentation to determine the ideal settings for your environment.

**Game Box RoR** Yes, No

Yes = Game Boxes can be re-used if the Player was respawned.

No = Game Boxes are one-time-use per player.

**Game Box Stay** Yes, No

Yes = Game Boxes allow unlimited use.

No = Game Boxes are one-time-use per player.

**Full Ammo RoR** Yes, No

Full Ammo ‘Reset on Respawn’. When this parameter is set to “Yes”, the player will receive

their full initial ammo loadout during any respawn.

If set to “No”, the player will continue with the same Ammo they had when they were killed

(tagged out). This can be useful to prevent players from ‘self-sacrificing’ (allowing themselves to

be killed) in order to gain more Ammo.

**Kill LED** 1 second to 240 seconds. Sets the timeout for the Sensor “Hit” LEDs. The LEDs will automatically turn off after this delay to conserve battery power.

**CLONING:** The Cloning feature enables the operator to quickly “copy” game settings from one tagger to another. All data is transmitted over the infrared link so no cables are required. The cloning function is also used to assign Team IDs and to synchronize the Global parameters on each tagger.

\_ Cloning can be performed by ANY tagger without need for a dedicated referee device.

\_ After a successful clone, the receiving tagger will indicate “Clone OK” and play the power up sound.

**Cloning Operation** – Use any tagger as the “Host”.

1. Turn Host Tagger OFF.

2. Turn Host Tagger ON while holding MODE button.

3. Press Trigger to access “Edit Preset1”.

4. Edit Game and Weapon settings as required.

5. Press Trigger at “Save Settings”.

6. Host Tagger will display “Clone Team A”.

7. Aim Host tagger at sensor of receiving tagger.

8. Press trigger to initiate Cloning.

9. Receiving tagger will display “Clone OK” and play Power-up sound.

10. Repeat steps 7. to 9. if “Error” occurs.

11. Repeat cloning for remaining Team A (Alpha) taggers.

12. Use BLACK button to select “Clone Team B”.

13. Repeat steps 7. to 9.

14. Use MODE button to select “Exit Config”.

15. Press Trigger to return Host Tagger to normal operation.

All Taggers should now display “Ready” and the assigned team (Red, Blue, Yellow, Green). This allows

game officials to verify correct team assignments prior to game start.

The Team ID of the Host Tagger is set in the Edit Menu.

**SCORE DOWNLOAD**

**Collect Player Scores on Referee Gun** – The Ref Gun is used to collect and compile score data from each tagger. This is done via infrared so no cables are required, and can easily be done in the field.

1. Use the Ref Gun “End Game” command to end any players that were not Tagged Out.

2. Clear all previous score data in the Ref Gun: In the Service Controls menu, select “Clear Scores”.

Press Trigger.

3. Prepare Ref Gun to collect Score data: In the Post Game Controls menu, select “Collect Scores”.

***NOTE:*** *Pulling the trigger while in the “Collect Scores” mode will send the “End Game” command.*

*This avoids switching between menus while collecting scores.*

4. Players can now download scores to the Ref Gun.

a. Tagger must be in the Game Over menus.

b. Point barrel at Ref Gun sensor (close range).

c. Pull and hold the TRIGGER.

d. Press the MODE button momentarily to start score transmit - indicated by “beep”.

e. Keep barrel in place (aimed at Ref Gun sensor) until second “beep”.

f. Watch Ref Gun LCD for confirmation notices or errors.

“Good Scores” is displayed at end of successful transfer.

g. If any errors, repeat steps a. through e.

h. Score data transfer takes about 3 seconds.

I. Repeat this process for each player.

If any player attempts to download scores twice, the Ref Gun will recognize this and indicate “Data

Exists”. This prevents corruption of the previously collected data.

**Transfer Player Scores to PC** – Data is transferred from the Ref Gun to the PC as ASCII characters using RS232 serial data format (8N1). Data is formatted into rows and columns using tab and line feed

characters.

1. Connect Ref Gun serial port to PC serial port (or USB port depending on cable used).

2. On PC, open scoring software or terminal program and enable “Capture to Text” if required.

3. On Ref Gun initiate transfer of compiled score data to PC: In the Post Game Controls menu, select

“Print Scores”. Press Trigger.

**Example Score Data for 3 Players:**

Hit Hit Hit Flags Rounds Rounds Tagged Number Game

# Name Team You Enemy Friend Scored Fired Scored YouOut Respwn Time

007 Blaze Delta 10 11 0 0 25 045% 1 0 1:25

025 Rambo Bravo 7 11 0 0 63 018% 0 0 1:58

026 Snake Alpha 10 5 0 0 15 034% 1 0 1:04

Individual Scores:

Blaze +00055

Rambo +00055

Snake +00025

Team Scores:

Alpha +00050

Bravo +00110

Charley +00000

Delta +00110

#- Player’s ID number

Name- Player’s handle

Team - Player’s Team

Hits - Number of times Player was hit

Score - Number of times Player hit an opponent or teammate

FF Hits - Number of times Player hit a teammate

Flags- Number of flags collected by Player

Rnds - Number of rounds fired by Player

Accur- Percentage of shots landed by Player (accuracy)

TagOut- Number of times Player was tagged out

Respwn- Number of times Player was respawned

Time- Elapsed time at end of game

**PLAYER ID / CALL SIGN:** Each tagger must be set to a unique Player ID to allow correct operation of the scoring features. You can permanently assign an ID to each gun, or allow players to select their Call Sign prior to the game. It may be helpful to label each tagger with the Call Sign.

\_ When you are tagged by another player, the Call Sign of the player that tagged you will appear in your

LCD display for a few seconds.

\_ The Player ID is not affected by Cloning or Mode Reset. Performing a Factory Reset will reset the

Player ID to “00 Eagle”. Individual Call Signs cannot be edited as they are permanently set in the

firmware.

**PLAYER ID HANDLE PLAYER ID HANDLE PLAYER ID HANDLE**

00 Eagle 25 Rambo 50 Crush

01 Joker 26 Snake 51 Xenon

02 Raven 27 Alien 52 Force

03 Sarge 28 Sting 53 Blitz

04 Angel 29 Zeena 54 Nomad

05 Cosmo 30 Bugsy 55 Zeuss

**PLAYER ID HANDLE PLAYER ID HANDLE PLAYER ID HANDLE**

06 Gecko 31 Viper 56 loner

07 Blaze 32 Jewel 57 Shrek

08 Chaos 33 Genie 58 Spawn

09 Fury 34 Logan 59 Venus

10 Flash 35 Razor 60 Brain

11 Elvis 36 Slick 61 Dozer

12 Homer 37 Venom 62Goose

13 Storm 38 Rocky 63 Kronk

14 Habit 39 Saber 64 Neo

15 Rebel 40 Dusty 65 Roman

16 Ronin 41 Romeo 66 Spike

17 Lucky 42 Orbit 67 Gunny

18 Radar 43 Vixen 68 Ozone

19 Blade 44 Tank 69 Apex

20 Ninja 45 Rogue 70 Siren

21 Magic 46 Sheik 71 Pinky

22 Gonzo 47 Gizmo 72 ElCid

23 Cobra 48 Ringo 73 Trace

24 Pappy 49 Rerun 74 Radio

**PLAYER ID HANDLE PLAYER ID HANDLE PLAYER ID HANDLE**

75 Bones 84 Titan 93 Chewy

76 Dixie 85 Waldo 94 Gator

77 Saint 86 Cylon 95 Spidy

78 Toxic 87 Vader 96 Scout

79 Hound 88 Saber 97 Ghost

80 Epoch 89 Tatoo 98 Panda

81 Lumpy 90 Curly 99 Hulk

82 Rhino 91 Ace

83 Talon 92 Yoda

**MODE RESET:** The Mode Reset initializes all gun/game parameters and most Global parameters to their

factory values. The Player ID setting is NOT affected.

To initiate a Mode Reset:

1. Turn Power OFF

2. Press and Hold the RELOAD and MODE buttons while turning power ON.

3. LCD will indicate “Mode Reset” and Firmware Version.

4. Release buttons.

5. After Reset the tagger will boot up in Preset 1 with default game settings.

**FACTORY RESET:** The Factory Reset initializes ALL memory locations. This is usually only required when

the tagger is first initialized at the manufacturer, or after a firmware update (chip replacement). It

should not be required during normal operation.

To initiate a Factory Reset:

1. Turn Power OFF

2. Press and Hold RELOAD, MODE and TRIGGER while turning power ON.

3. LCD will indicate “Factory Reset”.

4. Release buttons.

5. After Reset the tagger will boot up in Sport Mode with default game settings.

NOTE: After performing a Factory Reset, you will need to set the Player ID and adjust Global Parameters

as required.

**CLARIFICATIONS**

**Respawn vs. New Game:** Do not “Respawn” players to start a new game. When a player is respawned, they are brought back to life to continue the *same* game. The game timer and scores are not reset by a Respawn. The New Game command will reset the game timer and scores and initialize the player for a new game.

Respawn = Continue playing same game

New Game = Reset player for a New Game

**Respawns and Timed Games:** When using a timed game (Game Time > 0), the auto-respawn function will not work after the game time ends (Game Over) even if there are still respawns available. Also, players cannot be respawned by Referee or Respawn stations after game time ends.

**Bolt-Action (or Pump-Action) Simulation:** In some cases you may want to configure a tagger to

simulate a single-shot weapon, where the player is required to reload after every shot. To do this, set

the Firing Mode to “Semi-Auto”, set the Clip Size to “1” and set the Clips to the number of single-shot

rounds the player will carry. Set the Reload Delay to simulate the time required to work the “action”.

Now the player must hit the Reload button between every shot. This is useful for “Sniper” weapons

with high damage values, as it limits the rate of fire and leaves the Sniper vulnerable while reloading.

**100% Health:** In many game scenarios, you may wish to set the starting Life value to “100” points

representing an overall starting “health” of 100%. This simulates the game design concept of popular

PC/Console games and should be familiar to most players.

**Auto Respawn:** Auto Repawn (as the name implies) will automatically respawn a “tagged out” player

after a programmable delay. The maximum number of respawns allowed is set by the “Respawns”

parameter. The delay period is set by the “AutoResp” parameter in the Global Menu.

\_ This allows players to be respawned without Referee interaction, or needing to return to a “respawn point”.

\_ The LCD display will show a countdown until respawn. Game rules should dictate whether players are

allowed/required to move while they are waiting to respawn.

\_ Scores are not cleared or reset by a respawn.

**U.S. MILITARY PHONETIC ALPHABET**

**A**lpha **J**uliet **S**ierra

**B**ravo **K**ilo **T**ango

**C**harlie **L**ima **U**niform

**D**elta **M**ike **V**ictor

**E**cho **N**ovember **W**hiskey

**F**oxtrot **O**scar **X**-ray

**G**olf **P**apa **Y**ankee

**H**otel **Q**uebec **Z**ulu

**I**ndia **R**omeo

ZOMBIE MODE

**Zombie Mode** is designed to provide a very unique and fun (and creepy) game scenario.

First, if you have *never* seen one of the many zombie movies released over the past 60 years, go rent

one and watch it (with the lights on of course). Then come back here to continue reading…

Okay, now that you grasp the basic rules of human / zombie interaction, we can continue.

**Here’s how the game works:** The players are divided into 2 teams. One team is the “Humans” and the other team is the “Zombies”. The Zombies, as their nature dictates, must try to kill the Humans. The

Humans, in the interest of self-preservation, must try to kill the Zombies. So far this sounds like your

standard “Team Elimination” scenario, right? Well, not so fast, movie fans. Here comes the creepy

twist: When a Human is killed, after a short delay, they will come back to life….. as a ZOMBIE! (it’s okay

to scream)

As you have probably figured out, this will create an ever-increasing problem for the Humans as the

Zombies gain new recruits from the ranks of “dead Humans”. If the Humans don’t thin out that

relentless horde of un-dead opponents, they may soon be outnumbered and overwhelmed.

**Important note for Humans:** One thing that the Humans will have on their side is that dead

Zombies STAY dead. Dead Zombies do NOT come back to life. At least that’s the rule for

Zombie mode. Your movie may have been different, but in Zombie mode…. They’re out!

**What does a Zombie look like?** In the movies, the Zombies are generally pretty easy to pick out. They walk funny, they tend to be quite unattractive and – if you are a Human – they are the ones chasing you. In Zombie mode we don’t have time for scary make-up and learning the “zombie walk”… so we’ll just make the Zombies’ sensor(s) flash on and off. So you can clearly see them ‘coming for you’. Zombies aren’t good at hiding anyway.

**What do Zombies eat?** Zombies aren’t hungry for brains. So they don’t have to catch

you like the ones in the movies. But Zombies ARE well-armed and a bit harder to kill than your

average Human. And, since we can’t make them *move* slower, we will settle for making them *shoot*

slower. The Zombies will have to reload after every shot (bolt-action).

**Dead Humans** If you are a human and you get killed, don’t worry. Just stay where you are and wait for

the “transformation” (auto respawn). If you are a human and your teammate gets killed, worry. There’s

no question that he is coming back as a zombie and you need to get away… quickly.

**“Standard Issue” Zombies.** Zombies have certain fixed settings. Whether a player starts as a zombie or respawns from human to zombie, these “zombie settings” will be adopted automatically and cannot be changed. They will have 200 life points so they are harder to kill. They can only fire one shot at a time (bolt-action) with a damage setting of 10 points and a 1-second reload delay to simulate their limited aptitude for weapons.

**Human Settings** The settings for Humans are not limited, but we do have some suggestions. Humans

should be set to 100 life points to simulate “normal life”.

**Team Assignments** The RED team is the Zombies. The BLUE team is the Humans. Be careful in deciding how many players are assigned to each team. Remember that the Zombie team gains in size as human players are eliminated. You should balance the team sizes against how well-armed the humans are.

**Zombie Human**

Team = Alpha Team = Bravo

Health = **200** Health = 100

Clip Size = **1** Clip Size = \_\_\_

Clips = **200** Clips = \_\_\_

Damage = **10** Damage = \_\_\_

Reload Delay = **1 second** Reload Delay = \_\_\_

Hit Delay = **.25 second** Hit Delay = .25 second

Fire Select = **Semi** Fire Select = \_\_\_

Respawns = 1 Respawns = 1

Resp Delay = 60 seconds Resp Delay = 60 seconds

**BOLD** items are “fixed” values for Zombies

**Suggested Rules for Zombie Games**

1. When Humans are killed, they may not move until they are respawned as a Zombie.

2. When a Zombie is killed, they must leave the field immediately.

**MENU PARAM RANGE Function Cloned Mode Factory Reset Value Reset Value**

Boot1 Mode Normal, Ref Gun Sets the No Normal Normal

 active mode. The

 system will power up

 in the last mode with all

 game parameters intact.

Gun ID3 Player ID 0-99 Player ID and Handle. No No Change 0

 Each gun should be set to

 a different ID to allow scoring.

 The 5-character names

 (handles) assigned to each ID

 cannot be edited.

Global2

 IR Power Indoor/ Indoor= Lower IR power Yes Outdoor Outdoor

 Outdoor to limit reflected shots.

Range Min to Max Adjusts IR modulation Yes 60% 60%

 Power.

 Carrier 56 KHz IR carrier frequency No 56KHz 56KHz

 Medi Box 0-100 pts Yes 50 50

 Ammo Box 0-20 clips Yes 2 2

 Game Box Yes/No Yes No No

 Stay

 Game Box Yes/No Yes No No

 RoR

 Full Ammo Yes/No Ammo Reset on Respawn Yes Yes Yes

 RoR

 Volume 0-5 0=Loudest, 5=Quietest No No change 2

 Kill LED 1-240 sec Timeout for sensor LEDs Yes No change 240

 after player is tagged out. (Killed)

1 Boot Menu = hold the RELOAD button while turning power ON.

2 Global Menu = hold the RELOAD button while turning power ON and continue holding for ~3 seconds.

3 Gun ID Menu = hold the MODE button while turning power ON and continue holding for ~3 seconds.

**MENU PARAM RANGE Function Cloned Mode & Factory Reset Value Reset Value**

Edit Settings Team ID Alpha, Bravo ---------- Red

 Delta & Charlie

 Frnd Fire Yes, No Yes= same team Yes Yes

 Hits are allowed.

 Sounds MilSim, Sci-Fi, Changes firing Yes Sci-Fi Silencer and reload sound.

 MuzFlash On, Off Enable/ Disable Yes On muzzle flash

 Life 1-999 Initial Health Value Yes 100

 Armor Off, 5-200 Yes Off

 ClipSize 1-250, UNL Rounds per clip Yes 30

 Clips 2-200, UNL # of clips Yes 20

 Reload 1-30 sec. Reload delay time Yes 2 Sec.

 Fire Sel FullAuto, Firing mode Yes Burst

 SemiAuto,

 Burst

 Burst 2-6 Rnds Burst rounds Yes 3

 Cyclic 250-800 RPM Rate of fire RPM Yes 500

 (Rounds-per-minute)

 Damage 1-100 Damage inflicted Yes 1 pt

 to opponent by each “hit”

 HitDelay .00-20 Sec. Yes 1 Sec.

 Overheat Off, 10-100 On=sustained firing Yes 50

 will cause gun to “overheat”

 Max Resp Off, 1-20 Max number of auto- Yes 0

 respawns. Off=disabled

 Zombie On,Off

 AutoResp 10-180 sec. Auto-respawn delay time Yes 30 Sec.

 StartDly 0-240 sec. Delayed game start Yes 0

 DeathDly 0-120 sec. Death Delay time, Yes 0

 0=disabled

 GameTime 0-120 min. Time limit for game. Yes 0

 0=unlimited time.

Sixteen available Damage values [1, 2, 4, 5, 7, 10, 15, 17, 20, 25, 30, 35, 40, 50, 75, 100]

**REFEREE GUN**

**Referee Controls:**

**End Game:** Force player to “Game Over” - no change to scores.

**New Game Now**: Restart player – clear all scores/stats.

**New Game Ready**: Restart player – clear all scores/stats.

**Admin Kill**: Instantly “kill” player – add one “tagout” to scores.

**Admin Respawn:** Restart player – add one “respawn” to scores (continue current game).

**Admin Pause:** Pause player – no change to scores.

**Start Game:** Start a “paused” player – no change to scores.

**Restart Clock**: Set player’s elapsed game timer to “000:00”.

**Restore Ammo:** Set player to Full Ammo (initial ammo loadout).

**Test Sensor:** Test player’s sensors (flash and audible).

**Post Game Controls:**

**Collect Scores**: Receive and compile scores from players via Infrared.

**View Scores**: View Individual and Team compiled scores.

**Print Scores**: Transmit compiled scores to PC terminal. RS-232 @9600 baud (8N1).

**Service Controls:**

**Clear Scores**: Clear all internal Score Data from Referee Controller.

**Edit Sounds**: Enter ISD Sound Programmer Mode (RevH only).

**Print Test Data:** Send “dummy” data to PC to test serial connection/terminal.

**Data View:** Display first 2 bytes of data received by sensors.

**Sound Effects**

**ORDER SOUND MAX LENGTH ORDER SOUND MAX LENGTH**

1 Shot (Mil-Sim) 1500mS 16 --- 1000mS

2 Empty Chamber 1000mS 17 + Flag 2000mS

3 Start Reload (Clip Out) 1000mS 18 Flag Score (siren) 6000mS

4 End Reload (Mil-Sim) 1500mS 19 Clone Okay 2000mS

5 Near Miss 1500mS 20 Sensor Fail 1000mS

6 Hit - Damage 2000mS 21 Shot (Sci-Fi) 1000mS

7 Dead 3000mS 22 End Reload (Sci-Fi) 1000mS

8 Power Up 4000mS 23 Scores Okay 1000mS

9 Beep 1000mS 24 --- 1000mS

10 Buzz 1000mS 25 Shot (Silenced) 1000mS

11 + Medic 1000mS 26 Disarm Player 1000mS

12 + Ammo 1000mS 27 Low Battery 1500mS

13 --- 1500mS 28 --- 1500mS

14 Game Over 4000mS 29 --- 1000mS

15 Explosion 3000mS 30 Stunned 1000mS

NOTE: Make sure your sound effects fit the maximum length. If sounds are longer than the allotted space,

they will be cut short during recording.

**GLOSSARY**

**Admin** Administrator, Game Official, Referee

**Clone** copy settings from one tagger to another using infrared link (wireless)

**Cyclic** The ‘cyclic’ or ‘cyclic rate’ is the rate at which a weapon can fire successive rounds

also referred to as ‘Rate of Fire’; specified in Rounds-per-Minute

**FET** Field Effect Transistor.

**Friendly Fire** Hits received from players on your own team. With the MilesTag system you have the

option to turn Friendly Fire on or off. When Friendly Fire is turned off, you will not be able

to shoot your teammates.

**Hit-Delay** After a player is hit, this is a delay time during which the player cannot shoot or be hit by

opponents, the player is effectively ‘locked out’ during the Hit Delay.

**IR** Infrared

**LED** Light Emitting Diode

**Mil-Sim** Military Simulation

**Muzzle Flash** Visible flash of light emitted from a gun barrel during firing; simulated by bright LEDs

**Respawn** To bring a player back to life. Allows player to continue playing.

**WoW** Worlds of Wonder, refers to a very simple IR signal used in older Laser Tag gear. The

latest MilesTag operating system does not support the WoW protocol.

**NOTES:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**